



## **Operations Monitoring Report**

**Fourth Quarter FY12**

**Prepared by:**

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## **I. Executive Summary**

A review of the fiscal year 2012 (FY12) Fourth Quarter performance and contract obligations between Constellation Energy (CNE) and the Metropolitan Government of Nashville and Davidson County (Metro) is presented in this report by Thermal Engineering Group, Inc (TEG). The status of the available funds for all active capital construction and repair and improvement projects are also presented. For the fiscal year 2012, CNE has satisfactorily met all of the contract obligations to Metro and has had no contract violations.

For the Fourth Quarter FY12, the chilled water sales increased marginally over the previous Fourth Quarter (FY11). The Fourth Quarter FY12 saw a 5.3% increase in cooling degree days from the previous Fourth Quarter. The peak chilled water demand for the current quarter was 14,299 tons, which is approximately 6% lower than the previous Fourth Quarter despite a number of days in June with temperatures exceeding 100°F.

Annually, chilled water sales were only 2% higher in FY12 than in FY11. The number of cooling degree days has decreased by 3.4% in FY12 accompanied by a decrease in the peak demand of 1.7% (16,411 tons in FY12) from the summer of 2011.

A decrease in the steam sendout for the current quarter of approximately 7% over the previous Fourth Quarter is noted along with a 28% decrease in heating degree days. Likewise, steam sales also decreased by approximately 14% over the previous Fourth Quarter. Steam system losses were approximately 31% of the sendout, which was 22% higher than in the previous Fourth Quarter (relative to sendout). The peak steam demand for the current quarter was 62,750 pounds per hour, which represents an approximate 15% decrease from the previous Fourth Quarter.

The annual steam sendout decreased 7.4% in FY12 over FY11. The steam sales also decreased by approximately 10% with a significant decrease in heating degree days noted (23%). The peak steam demand was also approximately 6% lower in FY12 than in FY11 at 116,813 pounds per hour.

The Energy Generating Facility (EGF) performance continues to surpass the System Performance Guarantee (Guaranteed Maximum Quantity or GMQ) levels. The chilled water plant electric consumption continues to perform considerably lower than the guaranteed levels but was slightly higher than the value from the previous Fourth Quarter. The steam plant electric consumption decreased marginally over the previous Fourth Quarter. The steam plant fuel efficiency has decreased approximately 3.7% from the previous Fourth Quarter due in part to a significant decrease in the amount of condensate return. The total water consumption for the steam and chilled water plants increased approximately 16% from the previous Fourth Quarter marked by a 66% decrease in EDS make-up for the chilled water system and a 111% increase in the steam plant usage.

Work continued on DES Capital and Repair & Improvement Projects during the Fourth Quarter of FY12. No projects were closed during the Fourth Quarter, however, DES 048, 076, 087, 090

and 093 are now in close-out. One new project began during the Fourth Quarter FY12, DES 095 – Manhole B2 Water Infiltration Remediation. Chilled water service to the new Music City Convention Center began in April 2012 as scheduled and the steam service is anticipated in early July 2012. Design began on the new service connection to the Nashville Hyatt (DES-098) during the quarter. Repair and Improvements to the EDS continue as scheduled.

The current fiscal year system operating costs to date are \$17,054,958. This value represents approximately 82% of the total budgeted operating cost for FY12. The customer revenues from the sales of steam and chilled water for FY12 (to date) are \$15,741,994 which is approximately 86% of the budgeted amount. The difference between the operating costs and customer revenue is the Metro funding amount (MFA), which represents the shortfall in cash flow for the system. The MFA transferred to date for FY12 is \$2,363,000 (100% of budget). However, the actual MFA required cannot be accurately calculated due to the outstanding invoices.

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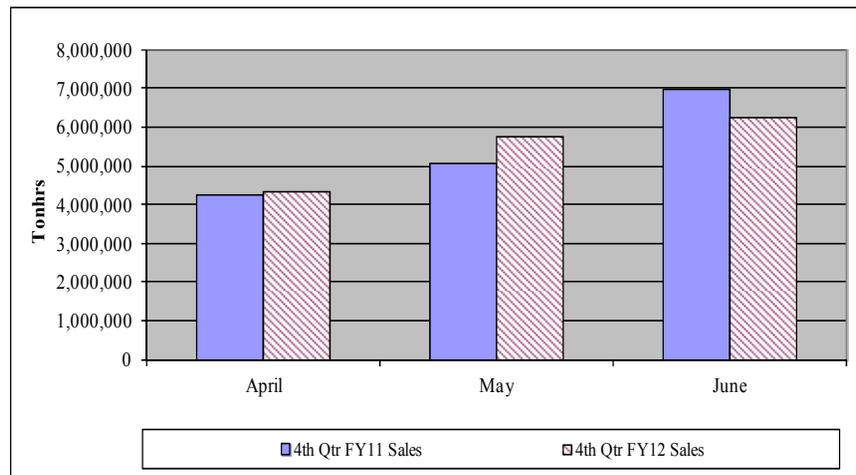
## II. Energy Distribution Sales and Performance

### A. Chilled Water

This section of the report discusses and presents performance information regarding the operation of the EGF for the periods described. Charts and tabular data are also presented to provide a more detailed description of the actual EGF performance.

#### 1. Sales and Sendout

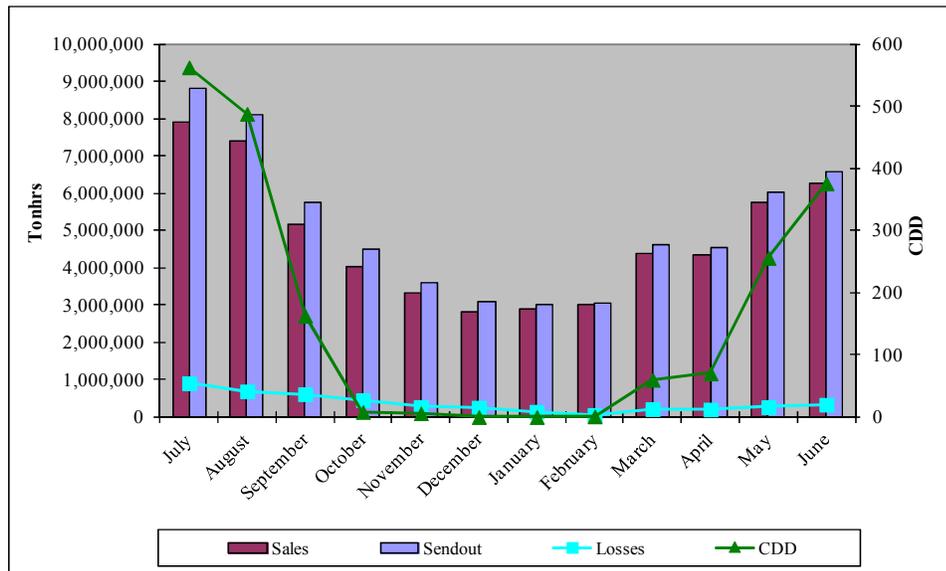
A comparison for the Fourth Quarter chilled water sales is shown in Figure 1. This data reflects a marginal increase in sales for the current quarter over the same quarter of the previous fiscal year. The quarter also experienced a 5.3% increase in the number of cooling degree days.



**Figure 1. Fourth Quarter FY12 Sales Comparison**

The peak chilled water demand for the current quarter was 14,299 tons. This peak demand is approximately 6% lower than in the previous Fourth Quarter.

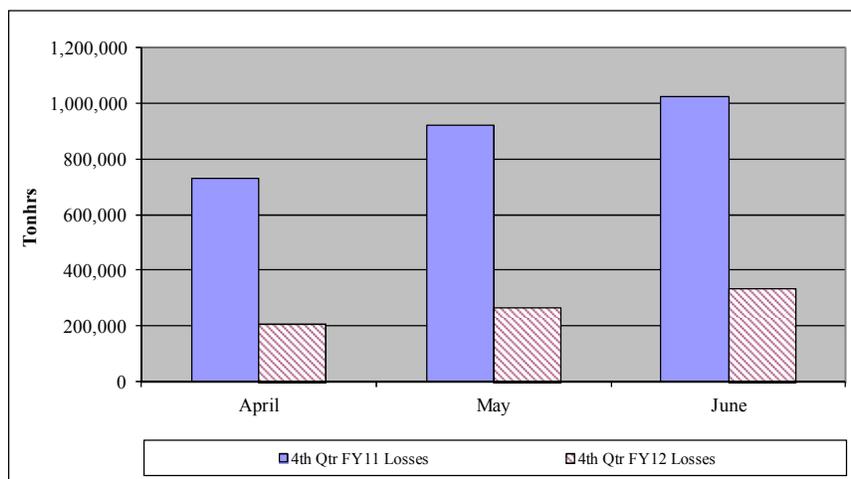
Figure 2 shows the chilled water sales, sendout and losses for the previous twelve months. The losses on this figure are defined as the difference in tonhrs per month between the recorded sendout and sales values and represent the total energy loss for chilled water in the EDS. The number of cooling degree days per month are also tracked for comparison.



**Figure 2. Chilled Water Sales, Sendout, Losses and CDD for the Previous Twelve Months**

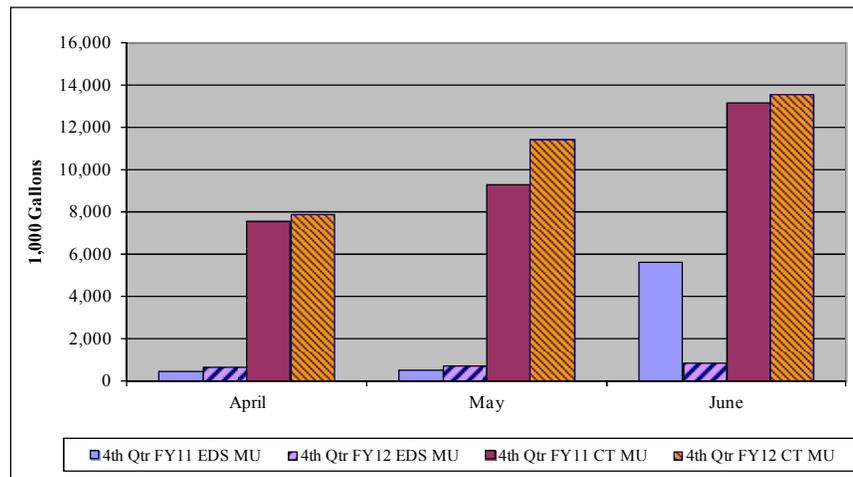
## 2. Losses

A comparison of the total, chilled water energy losses in the EDS for the Fourth Quarter is shown in Figure 3. These losses are the difference in chilled water sendout and sales. During the quarter, the new flow meter in the EGF chilled water line began being used to measure the total chilled water sendout. The use of this more accurate meter contributes to the significant decrease in recorded losses for the quarter.



**Figure 3. Chilled Water System Loss Comparison for the Fourth Quarter FY12**

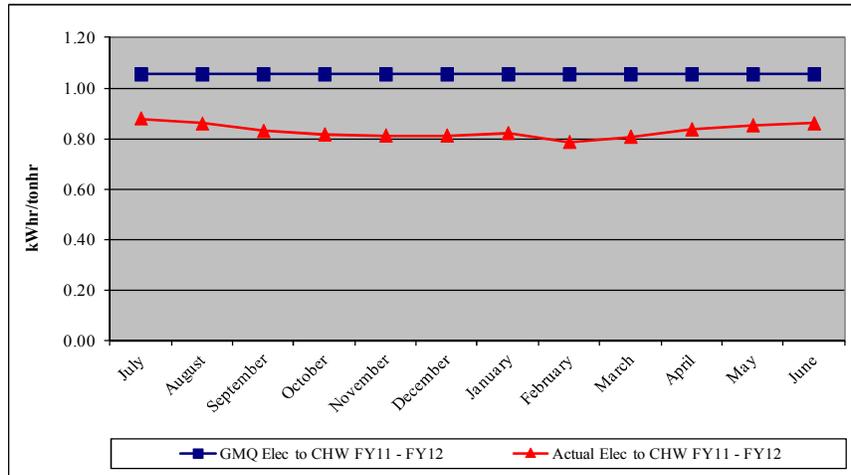
The EDS make-up decreased by approximately 66% over the previous Fourth Quarter due to repairs recently made in the system. The total energy losses have decreased by approximately 69% over the previous Fourth Quarter due to improvements in the EGF sendout metering equipment. The make-up to the cooling towers increased by approximately 9.6% (due to an increase in chilled water sales and ambient relative humidity). The number of cycles of concentration in the condensing water circuit experienced a 16.5% decrease during the current Fourth Quarter. The overall city water make-up comparison for the chilled water system is shown in Figure 4.



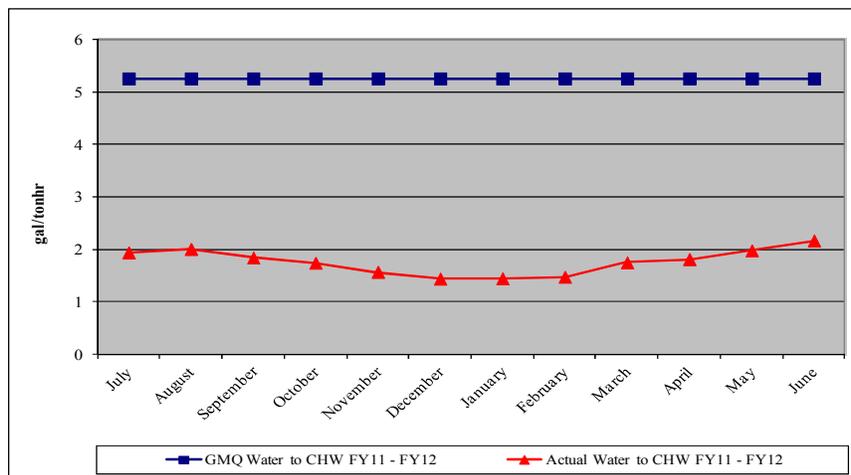
**Figure 4. Chilled Water System City Water Usage Comparison**

### 3. Performance

The performance of the chilled water aspect of the EGF is presented by the following two charts, Figures 5 and 6, for the previous twelve months. Under the management of CNE, the System Performance Guarantee levels as described in the ARMA are being achieved quite satisfactorily.



**Figure 5. Chiller Plant Electric Performance Guarantee Comparison for the Previous Twelve Months**



**Figure 6. Chiller Plant Water Consumption Performance Guarantee Comparison for the Previous Twelve Months**

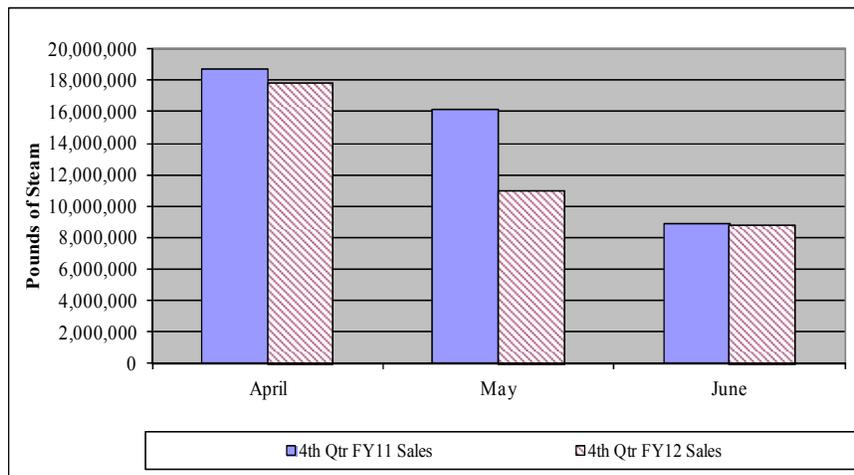
The chilled water allocation of the electric consumption falls under the GMQ limit of 1.055 kWhr per tonhr for the current quarter, and no excursion is reported for the current fiscal year. The chiller plant electric usage for the current quarter increased approximately 1.5% over the Fourth Quarter for FY11. The actual electric conversion factor increased 1.4% in the quarter.

The actual chilled water plant water conversion factor increased approximately 11.3% over the previous Fourth Quarter. The total consumption of city water for the chiller plant for the current quarter is approximately 11.4% higher than that for the previous Fourth Quarter.

B. Steam

1. Sales and Sendout

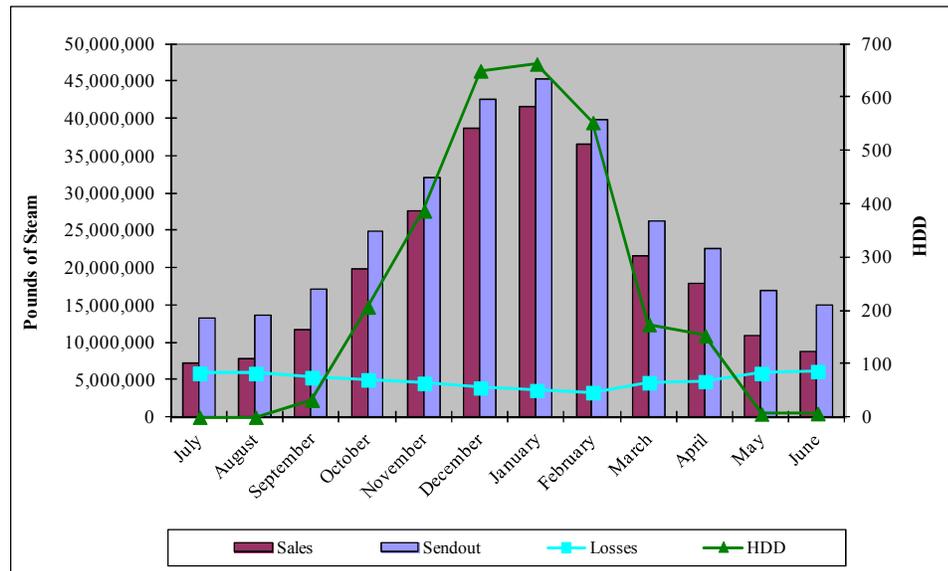
The steam sendout decreased by approximately 7% over the previous Fourth Quarter (FY11), and the sales decreased by approximately 14%. The steam system losses increased approximately 13.5% relative to sendout. The number of heating degree days have decreased by 28% over the previous Fourth Quarter. A comparison for the Fourth Quarter steam sales is shown in Figure 7.



**Figure 7. Steam Sales Comparison for the Fourth Quarter FY12**

The peak steam demand for the current quarter is 62,750 pph, which reflects an approximate 14.7% decrease in the peak steam production over the previous Fourth Quarter.

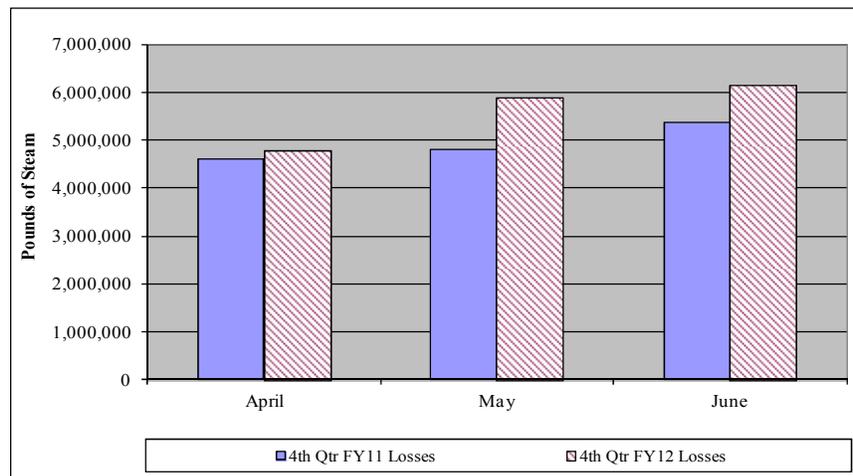
Figure 8 shows the steam sales, sendout and losses for the previous twelve months. The losses on this figure are defined as the difference in pounds per month between the recorded sendout and sales values and represent the total mass loss in the EDS between the EGF and the customer meters.



**Figure 8. Steam Sales, Sendout, Losses and HDD for the Previous Twelve Months**

## 2. Losses

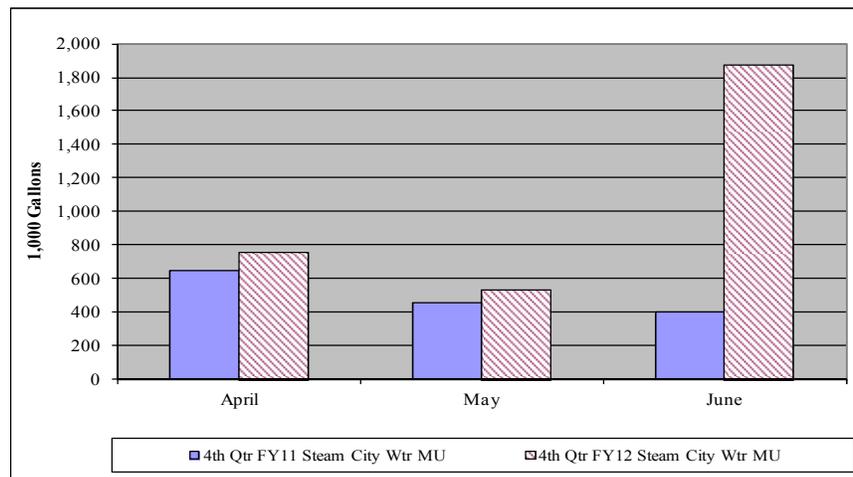
A comparison of the total steam mass losses in the EDS for the Fourth Quarter is shown in Figure 9. The mass loss is caused by the heat loss in the EDS between the EGF and the customer meters, resulting in a mass loss at steam traps. Faulty traps, steam leaks or meter error could also be a contributing cause of these losses.



**Figure 9. Fourth Quarter FY12 Steam System Losses**

The amount of city water make-up (MU) to the steam system consists of the loss in mass between the EGF and the customers, in the condensate return from the customers to the EGF and losses at the EGF. This data is shown in the comparison of Fourth Quarter data in Figure 10. Figure 10 depicts a significant

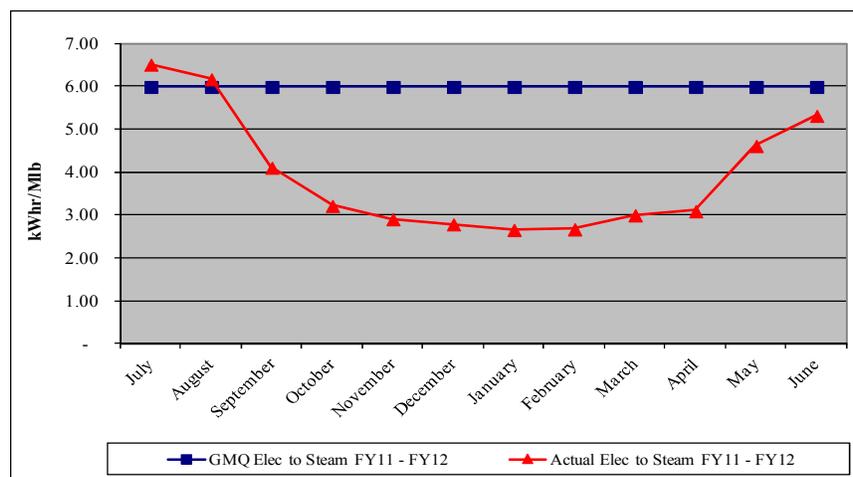
increase in city water make-up to the steam system of approximately 11% for the current quarter due to the dumping of condensate in June for high iron content. CNE continues to investigate the source of the iron but will have to continue rejecting the condensate from the customers until the source is discovered and remedied.



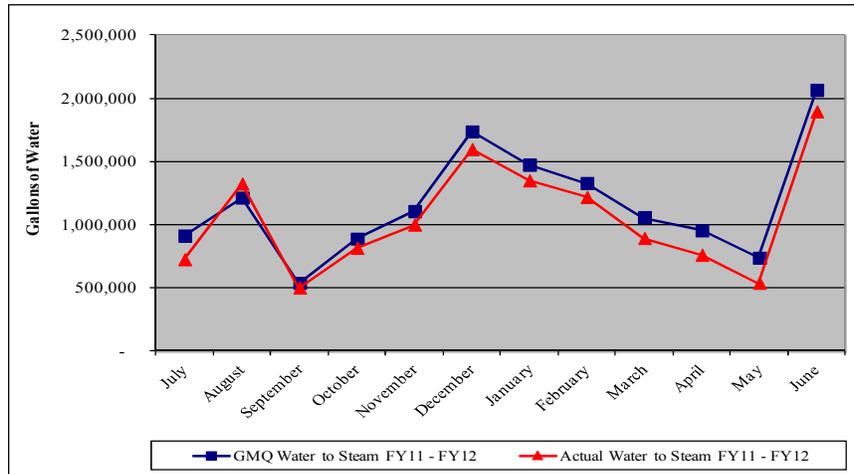
**Figure 10. Fourth Quarter FY12 Steam System City Water Make-up Comparison**

### 3. Performance

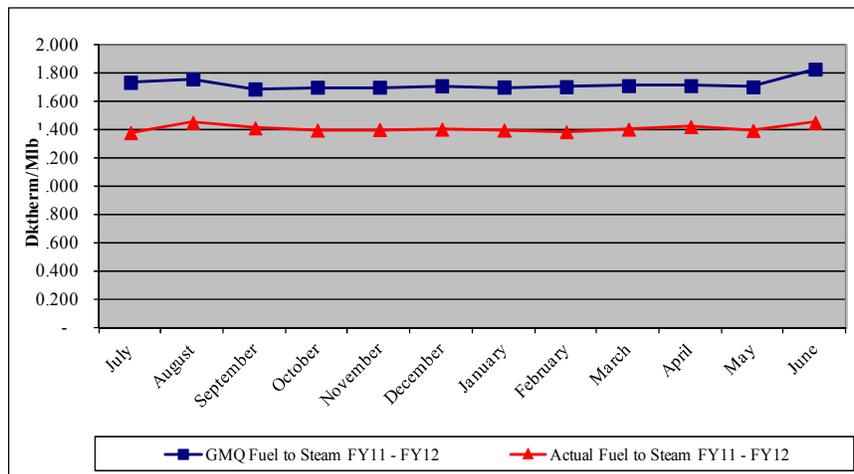
The performance of the steam system aspect of the EGF is presented by the following three charts, Figures 11, 12 and 13. Under the management of CNE, the System Performance Guarantee levels as described in the ARMA are being achieved satisfactorily.



**Figure 11. Steam Plant Electric Performance Guarantee for the Previous Twelve Months**



**Figure 12. Steam Plant Water Performance Guarantee for the Previous Twelve Months**



**Figure 13. Steam Plant Fuel Performance Guarantee for the Previous Twelve Months**

The current quarter experienced a marginal decrease in the steam plant electric consumption while experiencing a 15.5% increase in the electric conversion factor, which is indicative of lower than normal steam production. The water consumption for the steam plant increased 111% this quarter as compared to the previous Fourth Quarter. The fuel consumption per unit of steam sales is relatively constant throughout the year and when compared to the historic data. The boiler plant fuel efficiency decreased slightly for the current quarter.

### C. Contract Guarantee Performance

The production and sales performance for the EGF and EDS are summarized in Table 1 for the current quarter and the complete fiscal year. Additional parameters, such as cooling tower blow-down and peak demands are listed in this table, as well. Table 2 presents the Fourth Quarter and fiscal year comparisons of the Guaranteed Maximum Quantities (GMQ) of the criteria commodities (fuel, water and electricity).

**Table 1. Annual and Fourth Quarter FY12 Production, Sales and Consumption Summary**

Item	Unit	Fourth Quarter FY12	Fourth Quarter FY11	*Percent Difference	Total Year FY12	Total Year FY11	*Percent Difference
	days	91	91	0.00%	366	365	0.27%
<b>Total Electric Use</b>	kWhrs	14,056,204	13,855,345	1.45%	48,893,244	47,861,764	2.16%
Chilled Water	kWhrs	13,903,038	13,701,227	1.47%	48,069,290	47,009,987	2.25%
Steam	kWhrs	153,166	154,118	-0.62%	823,954	851,777	-3.27%
<b>Total Water Use</b>	kgal	38,078	32,839	15.95%	126,510	119,153	6.17%
Total Chilled Water	kgal	34,916	31,340	11.41%	114,021	106,633	6.93%
EDS Make-up	kgal	2,182	6,483	-66.35%	9,102	10,345	-12.02%
Cooling Towers	kgal	32,734	29,857	9.64%	104,919	101,288	3.58%
Calc CT Evaporation	kgal	27,728	25,949	6.86%	89,807	86,869	3.38%
CT Blowdown	kgal	5,006	3,908	28.10%	15,112	14,419	4.81%
Calc # Cycles		5.54	6.64	-16.58%	5.94	6.02	-1.36%
Steam	kgal	3,163	1,499	110.98%	12,490	12,520	-0.24%
<b>Total Fuel Use</b>	mmBTU	77,195	80,066	-3.59%	433,297	460,277	-5.86%
Natural Gas	mmBTU	77,195	80,030	-3.54%	432,944	459,983	-5.88%
Propane	mmBTU	0	36	n.a.	353	294	20.07%
<b>Condensate Return</b>	kgal	3,408	5,362	-36.45%	25,742	28,812	-10.65%
	lbs	27,793,506	43,731,668	-36.45%	209,950,338	234,984,721	-10.65%
Avg Temp	°F	161.3	168.3	-4.16%	163.8	169.3	-3.30%
<b>Sendout</b>							
Chilled Water	tonhrs	17,136,000	18,974,400	-9.69%	61,659,200	64,353,800	-4.19%
Steam	lbs	54,438,000	58,541,000	-7.01%	309,290,000	334,106,000	-7.43%
Peak CHW Demand	tons	14,299	15,225	-6.08%	16,411	16,700	-1.73%
Peak Steam Demand	lb/hr	62,750	73,563	-14.70%	116,813	123,938	-5.75%
CHW LF		54.87%	57.06%	-3.84%	42.77%	43.99%	-2.77%
Steam LF		39.72%	36.44%	9.02%	30.14%	30.77%	-2.05%
<b>Sales</b>							
Chilled Water	tonhrs	16,325,188	16,304,629	0.13%	57,232,609	56,118,251	1.99%
Steam	lbs	37,643,107	43,753,606	-13.97%	250,413,839	277,943,083	-9.90%
<b>Losses</b>							
Chilled Water	tonhrs	810,812	2,669,771	-69.63%	4,426,591	8,235,549	-46.25%
Steam	lbs	16,794,893	14,787,394	13.58%	58,876,161	56,162,917	4.83%
		30.85%	25.26%	22.14%			
<b>Degree Days</b>							
CDD		702	667	5.25%	1,991	2,062	-3.44%
HDD		166	231	-28.14%	2,832	3,692	-23.29%

\*positive percent difference values imply an increase from FY11 to FY12

**Table 2. Annual and Fourth Quarter FY12 Performance Guarantee Comparison for Steam and Chilled Water**

GMQ Calculations	Unit	Fourth Quarter FY12	Fourth Quarter FY11	*Percent Difference	Total Year FY12	Total Year FY11	*Percent Difference
<b>Steam</b>							
GMQ Elec Conversion	kWhr/Mlb	6.00	6.00		6.00	6.00	
Electric Conversion	kWhr/Mlb	4.07	3.52	15.51%	3.29	3.06	7.37%
GMQ Plant Efficiency	Dth/Mlb	1.745	1.693		1.718	1.702	
Plant Efficiency	Dth/Mlb	1.418	1.368	3.68%	1.401	1.378	1.69%
Actual %CR		51.06%	74.70%	-31.66%	67.88%	70.33%	-3.48%
Avg CR Temp	°F	161	168	-4.16%	164	169	-3.30%
GMQ Water Conversion	gal	3,756,956	2,088,161		14,007,199	13,976,406	
Water Conversion	gal	3,194,155	1,513,990	110.98%	12,614,425	12,645,200	-0.24%
<b>Chilled Water</b>							
GMQ Elec Conversion	kWhr/tonhr	1.055	1.055		1.055	1.055	
Electric Conversion	kWhr/tonhr	0.852	0.840	1.35%	0.840	0.838	0.26%
GMQ Water Conversion	gal/tonhr	5.25	5.25		5.25	5.25	
Water Conversion	gal/tonhr	2.14	1.92	11.27%	1.99	1.90	4.85%

\*positive percent difference values imply an increase from FY11 to FY12

#### D. Operating Costs

The operating costs for the DES include the management fee to CNE, debt service payments on the bonds and engineering and administration costs. The variable costs are dependent on the amounts of steam and chilled water produced and sold to the customers. These latter costs include the utility and chemical treatment costs. The vast majority of the costs incurred for the operation of the DES are passed onto the customers in the form of the demand charges (fixed costs) and energy charges (variable costs). A summary of the total operating costs for the fiscal year to date are shown in Table 3.

The revenues shown reflect the charges to the customers for their respective steam and chilled water service. The difference between the total costs and revenues from the customers is the shortfall that must be paid by Metro. The shortfall exists, in part, due to the remaining capacity at the EGF that was included in the original construction and remains unsold. This capacity is available for potential future customers.

The system operating costs for FY12 to date are \$17,054,958. This value represents approximately 82% of the total budgeted operating cost for FY12 and includes expenses to date that have been invoiced but were not paid at the time of this report. Additional invoices that would be charged to the Fourth Quarter have not been issued or paid at the time of this report. The customer revenues from the sales of steam and chilled water for FY12 are \$15,741,994 which is approximately 86% of the budgeted amount. The MFA transferred to date is \$2,363,000 (100% of budget). However, the actual MFA required cannot be accurately calculated due to the outstanding invoices.

**Table 3. DES Expenses and Revenues to Date**

Item	FY12 Budget	First Quarter Expenses	Second Quarter Expenses	Third Quarter Expenses	Fourth Quarter Expenses	Total Spending to Date	% of Budget
<b>Operating Management Fee</b>							
<b>FOC:</b> Basic	\$ 4,123,000	\$ 1,017,034.26	\$ 1,017,034.26	\$ 1,017,034.26	\$ 1,017,034.26	\$ 4,068,137.04	98.67%
9th Chiller	\$ 38,300	\$ 9,529.74	\$ 9,529.74	\$ 9,529.74	\$ 9,529.74	\$ 38,118.96	99.53%
C/O 6A	\$ 75,600	\$ 18,814.74	\$ 18,814.74	\$ 18,814.74	\$ 18,814.74	\$ 75,258.96	99.55%
C/O 6B	\$ 66,200	\$ 16,471.41	\$ 16,471.41	\$ 16,471.41	\$ 16,471.41	\$ 65,885.64	99.53%
<b>Pass-thru Charges:</b> Chemical Treatment	\$ 186,600	\$ 14,705.27	\$ 27,815.27	\$ 22,871.82	\$ 22,042.96	\$ 87,435.32	46.86%
Insurance	\$ 28,500	\$ -	\$ -	\$ -	\$ 25,227.90	\$ 25,227.90	88.52%
<b>Marketing:</b> CES Sales Activity	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	n.a.
Incentive Payments	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	n.a.
<b>FEA:</b> Steam	\$ -	\$ 12,506.87	\$ 32,049.45	\$ 37,329.79	\$ 13,784.10	\$ 95,670.21	n.a.
Chilled Water	\$ -	\$ 151,805.21	\$ 74,760.38	\$ 83,005.88	\$ 103,284.12	\$ 412,855.59	n.a.
<b>Misc:</b> Metro Credit	\$ -	\$ (183,311.41)	\$ (98,300.85)	\$ (88,816.04)	\$ (140,060.45)	\$ (510,488.75)	n.a.
ARFA	\$ -	\$ 14,770.83	\$ 14,770.83	\$ 14,770.83	\$ 14,770.83	\$ 59,083.32	n.a.
Deferral	\$ -	\$ -	\$ (47,574.51)	\$ (120,335.67)	\$ (117,068.22)	\$ (284,978.40)	n.a.
<b>Subtotal - Man Fee =</b>	<b>\$ 4,518,200</b>	<b>\$ 1,072,327</b>	<b>\$ 1,065,371</b>	<b>\$ 1,010,677</b>	<b>\$ 983,831</b>	<b>\$ 4,132,206</b>	<b>91.46%</b>
<b>Reimbursed Management Fee + Chem Treatment</b>		\$ 1,255,638.33	\$ 1,163,671.57	\$ 1,099,492.80	\$ 1,123,891.84	\$ 4,642,694.54	0.00%
<b>Metro Costs</b>							
<b>Pass-thru Charges:</b> Engineering	\$ 27,000	\$ 10,398.14	\$ (1,797.00)	\$ 72.20	\$ 1,070.21	\$ 9,743.55	36.09%
EDS R&I Transfers	\$ 254,500	\$ 63,624.99	\$ 63,624.99	\$ 63,624.99	\$ 63,624.99	\$ 254,499.96	100.00%
Metro Marketing	\$ 15,500	\$ -	\$ -	\$ -	\$ -	\$ -	0.00%
Project Administration	\$ 30,700	\$ -	\$ -	\$ -	\$ -	\$ -	0.00%
Metro Incremental Cost	\$ 488,600	\$ 123,322.42	\$ 103,227.10	\$ 109,871.48	\$ 113,933.22	\$ 450,354.22	92.17%
<b>Utility Costs:</b> Water/Sewer	\$ 597,700	\$ 167,065.58	\$ 81,813.20	\$ 72,037.56	\$ 123,924.77	\$ 444,841.11	74.43%
EDS Water/Sewer	\$ -	\$ 13.34	\$ 26.68	\$ 42.52	\$ 45.02	\$ 127.56	n.a.
EDS Electricity	\$ -	\$ 16,245.83	\$ 16,487.65	\$ 16,778.78	\$ 16,135.68	\$ 65,647.94	n.a.
Electricity	\$ 5,192,900	\$ 1,956,010.36	\$ 730,662.30	\$ 802,566.82	\$ 1,211,774.56	\$ 4,701,014.04	90.53%
Natural Gas Consultant	\$ 92,700	\$ 4,357.50	\$ 3,847.50	\$ 9,823.75	\$ 971.25	\$ 19,000.00	20.50%
Natural Gas Transport	\$ -	\$ 33,351.62	\$ 57,444.77	\$ 62,090.09	\$ 39,453.04	\$ 192,339.52	n.a.
Natural Gas Fuel	\$ 3,846,600	\$ 282,156.22	\$ 615,593.89	\$ 667,022.26	\$ 256,781.72	\$ 1,821,554.09	47.35%
Propane	\$ -	\$ -	\$ -	\$ 14,798.61	\$ -	\$ 14,798.61	n.a.
<b>Subtotal - Metro Costs =</b>	<b>\$ 10,546,200</b>	<b>\$ 2,656,546</b>	<b>\$ 1,670,931</b>	<b>\$ 1,818,729</b>	<b>\$ 1,827,714</b>	<b>\$ 7,973,921</b>	<b>75.61%</b>
<b>Subtotal - Operations =</b>	<b>\$ 15,064,400</b>	<b>\$ 3,728,873</b>	<b>\$ 2,736,302</b>	<b>\$ 2,829,406</b>	<b>\$ 2,811,546</b>	<b>\$ 12,106,126</b>	<b>80.36%</b>
<b>Debt Service</b>							
2002 Bonds	\$ 4,377,100	\$ 926,092.32	\$ 1,049,592.18	\$ 1,049,592.18	\$ 1,228,354.68	\$ 4,253,631.36	97.18%
2005 Bonds	\$ 306,200	\$ 149,108.48	\$ -	\$ 141,825.57	\$ -	\$ 290,934.05	95.01%
2007 Bonds	\$ 227,800	\$ 224,150.00	\$ -	\$ -	\$ -	\$ 224,150.00	98.40%
2008 Bonds	\$ 220,500	\$ -	\$ -	\$ -	\$ 224,150.00	\$ 224,150.00	101.66%
2010 Bonds	\$ 682,100	\$ -	\$ -	\$ 21,177.03	\$ -	\$ 21,177.03	3.10%
Interest Revenue	\$ (110,000)	\$ (12,918.75)	\$ (28,767.19)	\$ (3,970.21)	\$ (19,018.20)	\$ (64,674.35)	58.79%
MIP	\$ -	\$ (60.39)	\$ (139.66)	\$ (66.68)	\$ (270.05)	\$ (536.78)	n.a.
Oper. Reserve Fund	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	n.a.
<b>Subtotal - Capital =</b>	<b>\$ 5,703,700</b>	<b>\$ 1,286,372</b>	<b>\$ 1,020,685</b>	<b>\$ 1,208,558</b>	<b>\$ 1,433,216</b>	<b>\$ 4,948,831</b>	<b>86.77%</b>
<b>Total =</b>	<b>\$ 20,768,100</b>	<b>\$ 5,015,245</b>	<b>\$ 3,756,987</b>	<b>\$ 4,037,964</b>	<b>\$ 4,244,762</b>	<b>\$ 17,054,958</b>	<b>82.12%</b>
<b>Customer Revenues</b>							
Taxes Collected		\$ 95,295.87	\$ 72,193.02	\$ 71,570.95	\$ 75,288.27	\$ 314,348.11	n.a.
Taxes Paid		\$ 95,296.00	\$ 72,193.00	\$ 71,571.00	\$ 75,288.00	\$ 314,348.00	n.a.
Penalty Revenues		\$ 9,312.86	\$ 13,694.65	\$ 11,553.09	\$ 12,399.99	\$ 46,960.59	n.a.
Energy Revenues Collected		\$ 4,660,810.82	\$ 3,636,748.97	\$ 3,674,581.14	\$ 3,722,892.78	\$ 15,695,033.71	n.a.
<b>Revenues =</b>	<b>\$ 18,405,100</b>	<b>\$ 4,670,123.55</b>	<b>\$ 3,650,443.64</b>	<b>\$ 3,686,134.18</b>	<b>\$ 3,735,293.04</b>	<b>\$ 15,741,994.41</b>	<b>85.53%</b>
<b>Metro Funding Amount =</b>	<b>\$ 2,363,000</b>	<b>\$ 345,121</b>	<b>\$ 106,543</b>	<b>\$ 351,830</b>	<b>\$ 509,469</b>	<b>\$ 1,312,963</b>	<b>55.56%</b>

The DES serves 26 customers and 41 buildings in downtown Nashville, including the new Music City Convention Center (MCCC). These customers are divided into three categories: 1) Private customers who privately own their buildings, 2) State of TN owned buildings and 3) Metro owned buildings. For FY12, the MCCC is considered a Metro owned building even though the general contractor is paying for temporary services. A summary of the annual costs for each of these three categories is presented in Table 4. These values include late fees and penalties and any unpaid balances.

**Table 4. Customer Revenue Summary to Date**

Building	Chilled Water			Steam		
	Total Cost	Consumption (tonhrs/yr)	Unit Cost (\$/tonhr)	Total Cost	Consumption (Mlb/yr)	Unit Cost (\$/Mlb)
Private Customers	\$ 3,966,552	20,506,967	\$ 0.1934	\$ 1,442,920	79,260	\$ 18.2050
State Government	\$ 3,458,497	17,405,473	\$ 0.1987	\$ 1,854,011	88,985	\$ 20.8351
Metro Government	\$ 3,344,278	19,320,169	\$ 0.1731	\$ 1,662,320	82,169	\$ 20.2305
New Customers	\$ 1,326,633	6,839,773	\$ 0.1940	\$ 232,952	13,409	\$ 17.3730
<b>Total</b>	<b>\$ 10,769,328</b>	<b>57,232,609</b>	<b>\$ 0.1882</b>	<b>\$ 4,959,251</b>	<b>250,414</b>	<b>\$ 19.8042</b>

Total Revenue	\$	15,728,579
True-up and Adjustments (Net)	\$	13,416
Net Revenue	\$	15,741,994

### III. EGF Operations

Items relating to the facility operations presented herein are derived from the monthly reports issued by CNE for FY12. Communication between TEG and CNE continues to be excellent, and CNE has reported and managed all EGF operations satisfactorily and according to the ARMA with no contract violations.

#### A. Reliability

The principle issues surrounding the reliable operation of the EGF relates to the ability to operate without significant interruption, exclusive of planned outages, and disruption of service to the customers. The following disruptions in service occurred during the quarter.

- The only excursions that occurred during the quarter were in June when higher than normal chilled water supply temperatures were produced for less than one hour when additional chillers were started.
- Excursions and disruptions in operations that have occurred throughout the year are included in the individual Monthly Operational Reports from CNE.

#### B. Efficiency

The operation of the EGF satisfied the guaranteed levels for all commodity usage during the quarter. There were no significant excursions above the guaranteed levels for the Third Quarter. A more detailed discussion of the contract guarantee performance was presented previously in this report.

#### C. Environment, Health and Safety

No environmental violations were reported during the quarter.

Monthly safety meetings were held on Emergency Preparedness, Violence in the Workplace and MSDS and Chemical Safety. Safety meetings were not held as scheduled during June due to a sudden death in the family for the scheduled presenter.

D. Personnel

The EGF currently has twenty-five full time employees. Of the current number of employees, seventeen were previously employed by Nashville Thermal Transfer Corporation.

E. Training

Staff training for this quarter consisted of the Health and Safety training discussed previously.

F. Water Treatment

The water treatment program consists of regular testing and monitoring of the water chemistry in the steam, chilled water and condensing water systems. Chemicals are added to control the water hardness, chlorine levels and biologicals. Remote testing of the condensate at the AA Birch, Tennessee Tower and the Andrew Jackson also occurs regularly to monitor the concentration and distribution of the steam system chemicals.

- Steam System
  - The steam and condensate system had excellent chemistry for most of April and May, but high hardness levels in the condensate required dumping the majority of the condensate return in the latter half of May and all of June. Although CNE continues to investigate, the source of the hardness was not determined during the quarter.
  - The condensate return averaged 70% of the steam sendout during April, 69% during May but only 2.3% during June. The average for the quarter was only 51%, reflecting a 36% decrease in condensate return over the Fourth Quarter FY11.
  - The condensate return average 68% for FY12, but was still 10.7% less than in FY11. A low amount of condensate return requires additional city water make-up and reduces the efficiency of the boiler plant, which both contribute to higher steam costs.
- Condensing Water System
  - The conductivity of the condensing water continues to be normal with only a few excursions resulting in high cycles of concentration and low blowdown rates.

- Chilled Water System
  - The control of the system chemistry continues to be excellent.

#### G. Maintenance and EGF Repairs

CNE continues to report on the numerous routine maintenance and preventive maintenance activities performed on the EGF primary and ancillary equipment. The principle items are discussed herein as they relate to the repair, maintenance or replacement of equipment or devices at the facility and are not considered extraordinary. The cost for these items is included as part of the FOCs.

- New blowdown valves were installed on boilers #1, #3 and #4.
- New pneumatic actuators were installed on the evaporator inlet to chiller #1 and the condenser inlet to chiller #3.
- A tube leak was repaired in boiler #2.
- The fan bearings were replaced on cooling tower #3.
- Condensate pump #6 was rebuilt.
- Minor repairs were made to the chemical feed system.
- Other minor repairs and maintenance were made during the quarter and are listed in the monthly reports issued by CNE.

#### H. EGF Walk-through

A quarterly Walk-through of the EGF was performed on July 3, 2012, by Kevin Jacobs, P.E. with TEG. This review involved a tour of the facility with the primary points of interest and concern noted herein.

- Many of the housekeeping items noted in the previous walk-through have been repaired or resolved. Some empty boxes and other items are still being stored in the electric room. These items need to be removed.
- The insulation on Chiller #1 evaporator and on Chillers #4 and #6 remain in need of repair. The insulation to other chillers and their water boxes has been repaired.
- A water leak was observed from the city water lines in front of boiler #4. This leak should be repaired.
- A portion of the wooden platform at the expansion tank #2 remains and should be removed as soon as possible.
- Other minor items remaining include:
  - Corrosion is noted to have returned on the riser piping in the cooling towers; these may soon need cleaning and re-painting;
  - Cobwebs have reformed in various places throughout the plant and on MCCC 4 located near the boilers; these should be removed.
  - The light fixture next to chiller #2 was blinking again and is in need of additional attention.

#### **IV. Capital Projects**

The Capital Projects discussed in this section are those projects funded through the issuance of bonds by Metro. Costs for these projects will be paid from funds already appropriated. The statuses of the projects are discussed, and the project cost-to-date and bond balances are also presented.

##### **A. Fourth Quarter FY12 Open Projects**

The following projects remained open at the end of the Fourth Quarter FY12.

##### **1. DES033 – Manhole Lid and Ring Replacement/Restoration**

This project relates to the repair and replacement of manhole lids and rings whenever Metro Public Works performs Street re-paving. This project will remain open.

##### **2. DES048 – Tunnel Lighting & Electrical Upgrades Phase III**

Work was completed on this project during the Fourth Quarter FY12. This project is now in close-out.

##### **3. DES076 – Manhole S4A Rehabilitation**

The work was substantially completed during the Third Quarter FY12. Cost substantiation documents were reviewed and approved and delivered to the State for their review. The total cost for this project is expected to be reimbursed by the State of Tennessee since the vault structure belongs to them and not the DES. This project will be invoiced to the State during the 1<sup>st</sup> Quarter FY13 and close-out is anticipated during the same quarter.

##### **4. DES077 – Music City Center Service Connection**

The repairs to the new steam and condensate lines are nearing completion and steam to the new MCCC is anticipated in July. The chilled water service began in April. Temporary services are being charged to the general contractor, Bell/Clark, until construction is complete or nearing completion and the contract for services between DES and the MCCC has been finalized. Contract negotiations continued through the Fourth Quarter.

Additional aspects of this project include the MCCC metering station, the cooling tower testing and the modification of the EGF chilled water pumps. The chilled water side of the MCCC metering station was completed and started in April.

The check-out and start-up of the steam metering station will coincide with the start-up of steam service.

The replacement motor for the new chilled water pumps was installed and tested during the Fourth Quarter. The new chilled water pumps are completed and operational.

A second cooling tower test is scheduled to occur in July in order to verify the performance and capacity of the existing cooling towers. CNE has made repairs and improvements to the towers since the test that was performed in July of 2011. These tests are necessary to ensure that the existing equipment can perform as designed and that the design chilled water capacity can be dispatched from the EGF. This second cooling tower test will be included as a separate project number, DES-097.

5. DES080 – Misc. Manhole & Tunnel Safety Repairs

As a result of the ongoing review of the manholes and tunnels, some safety items have been noted that require attention. This project was established to address these items.

This project was bid and awarded during the First Quarter FY12. Work began during the Second Quarter FY12 and the contracted work was substantially completed during the Third Quarter FY12. Some additional items were added to the contract and work began on these items during the Fourth Quarter FY12. It is anticipated that these additional items will be completed during the First Quarter FY13.

6. DES087 – Exploratory Excavation & Repairs at Manhole D (CJC)

This project is in close-out.

7. DES090 – Manhole & Tunnel Insulation Repair (Revised from DES060)

Work was completed on the tunnel insulation during the Fourth Quarter FY12. Work associated with this project will be ongoing as required.

8. DES091 – Thermal Storage and NES Time of Use Rates

The evaluation of the feasibility of thermal storage is on-going.

9. DES093 – Manhole 6 Repair and Structural Rehabilitation

This project is in close-out.

10. DES 094 – Molloy Street Exploratory Dig

Excavation across 1<sup>st</sup> Avenue was started during the Fourth Quarter FY12. An abandoned storm sewer was discovered draining groundwater into this excavation. Due to this unexpected discovery and the approaching Country Music Celebration week, it was decided to backfill the excavation until after these festivities.

With the cooperation of Metro Public Works, 1<sup>st</sup> Avenue South was closed for a week late in the Fourth Quarter FY12 in order to excavate the full width of the street and make expeditious repairs. Modifications were made to the steam conduit to alleviate the infiltration of groundwater. In addition, due to the amount of groundwater entering the excavation and its impact to the steam system and manhole structures, it was decided to construct a permanent sump pit at this location. All of this work was completed and cost substantiation documentation is expected to be received and reviewed during the First Quarter FY13.

11. DES 095 – Manhole B2 Water Infiltration Remediation

Groundwater infiltration into Manhole B2 has increased over the last year. Metro Water & Sewer has been contacted and they have discovered some small water leaks in the area however the water infiltration into Manhole B2 has not subsided. Therefore, a contractor with expertise in water infiltration into underground structures was retained to seal this manhole. The work will include a two-step process. The first step will be to seal the wall penetrations and the second step will be to coat/seal the interior walls. The first step was begun during the Fourth Quarter FY12.

12. DES 098 – Nashville Hyatt Place Customer Connection

The Nashville Hyatt Place is a new hotel currently under construction at the intersection of Third Ave South and Molloy Street. After serious marketing efforts, this hotel has decided to connect to the DES from the service mains in Molloy. The design for this service connection began in the Fourth Quarter FY12. Bid documents are anticipated to be produced in the First Quarter FY13 with construction commencing in the Second Quarter. This new hotel will contract for 250 tons and 6,300 pph of steam.

B. Fourth Quarter FY12 Closed Projects

No projects were closed during the Fourth Quarter FY12.

### C. Capital Projects Budget

The following table summarizes the costs and remaining balance of the DES capital projects based on reported expenditures at the end of the FY12. Open projects or completed projects that require some additional management are shown. Total costs for projects that are closed are shown with a gray highlight. Only the funds currently available are shown.

**Table 5. Capital Projects Expense Summary**

DES Project #	Description	Total Budget	FY12 Spending to Date	Total Spent to Date	Remaining Balance
<b>2005B Bond Projects</b>					
DES-061	Tunnel Steel Corrosion	\$ 250,000.00	\$ 4,718	\$ 68,862	\$ 181,138
DES-048	Tunnel Lighting Phase III	\$ 600.00	\$ 8,756	\$ 8,756	\$ (8,156)
DES-063	Sump Pump MH-A, B and M	\$ 4,000.00	\$ 3,326	\$ 3,326	\$ 674
Total Closed Projects		\$ 7,320,301	\$ -	\$ 7,759,672	\$ (439,371)
	Project Development	\$ 611,599	\$ 30,629	\$ 293,328	\$ 265,715
<b>Total 2005B Bond</b>		<b>\$ 8,181,900</b>	<b>\$ 47,429</b>	<b>\$ 8,186,500</b>	<b>\$ (0)</b>
<b>2010 Bond Projects</b>					
DES067	Tunnel Rock Repair	\$ 1,176,354	\$ 35,512	\$ 1,097,604	\$ 78,750
DES070	MH 6 to 23 Cond Line	\$ 20,000	\$ -	\$ 527	\$ 19,473
DES071	Hermitage Hotel Ser Modifications	\$ 20,000	\$ -	\$ 1,119	\$ 18,881
DES072	Sheraton Stm & Cond Line	\$ 11,000	\$ 9,662	\$ 10,462	\$ 538
DES076	MH S4A Rehabilitation	\$ 233,000	\$ 195,623	\$ 209,117	\$ 23,883
DES088	AJ/State Tunnel Steam PRV Air Control	\$ 25,000	\$ 23,418	\$ 23,418	\$ 1,582
DES091	NES Time of Use Electric Rate	\$ 50,000	\$ 19,088	\$ 49,464	\$ 536
DES092	Sheraton CHW Pumps	\$ 62,950	\$ 62,743	\$ 62,909	\$ 41
Total Closed Projects		\$ 495,000	\$ 68,527	\$ 417,684	\$ 77,316
	Metro Project Admin	\$ -	\$ -	\$ -	\$ -
	Project Man, Development, etc	\$ 312,696	\$ -	\$ -	\$ 312,696
<b>Total 2010 Bond</b>		<b>\$ 2,410,000</b>	<b>\$ 414,572</b>	<b>\$ 1,876,222</b>	<b>\$ 533,778</b>
<b>MCCC Construction Fund</b>					
DES077	Music City Convention Center Design/Const	\$ 445,900	\$ 118,589	\$ 410,782	\$ 35,118
DES077	MH-B4 Valve Replacement	\$ 8,000	\$ -	\$ 7,119	\$ 881
DES077	MCCC Metering	\$ 121,870	\$ 120,670	\$ 120,670	\$ 1,200
DES077	EGF Cooling Tower Testing	\$ 49,484	\$ 49,406	\$ 49,406	\$ 78
DES077	EGF Chilled Water Pumps	\$ 598,672	\$ 598,672	\$ 598,672	\$ -
DES077	Bell/Clark Construction Fund	\$ 4,697,860	\$ 506,303	\$ 4,063,339	\$ 634,521
DES097	EGF Cooling Tower Test #2	\$ 30,000	\$ 1,422	\$ 1,422	\$ 28,578
DES098	Nashville Hyatt Service Connection	\$ 600,000	\$ 12,612	\$ 12,612	\$ 587,388
	Metro Project Admin	\$ -	\$ -	\$ -	\$ -
	Project Man, Development, etc	\$ 1,948,214	\$ -	\$ -	\$ 1,948,214
<b>Total MCCC Construction Fund</b>		<b>\$ 8,500,000</b>	<b>\$ 1,407,673</b>	<b>\$ 5,264,022</b>	<b>\$ 3,235,978</b>

### V. Energy Distribution System Repairs, Improvements, PM and Emergencies

Several EDS repairs and improvements were made during the Fourth Quarter. The principle items for discussion are presented in the following sections.

#### A. Repairs and Improvements

Several repairs were made to the EDS and at customer buildings during the quarter. The remaining value of the R&I budget at the end of the current quarter is \$428,758. Table 6 provides a summary of the FY12 expenditures and revenues to date associated with the R&I budget.

**Table 6. Repair and Improvement Expenditure and Revenue Summary**

Description	Date	Tracking #	Vendor	Expenditure	Transfers	Net Market Adjustment	Market Value	Balance
<b>Value at end of FY11</b>								
DES Repair And Improvements, for billing period of (7/3/11 - 7/30/11)	8/8/2011	DES-1384	TEG	\$ 6,452.15		\$ -	\$ 403,653.04	\$ 403,653.04
ADJUSTMENT FROM 2010 BOND	7/31/2011	N/A	N/A	\$ (89,912.00)				
ADJUSTMENT FROM 2010 BOND	7/31/2011	N/A	N/A	\$ (35,478.66)				
TEG August Invoice	9/13/2011	N/A	TEG	\$ 4,246.12				
CE; DES Proj;DES-086 MH	9/16/2011	N/A	CE	\$ 66,589.48				
CE; 401 Union bldg Strm	9/16/2011	N/A	CE	\$ 6,924.45				
CE;DES CES Mgmt Fees July	9/16/2011	N/A	CE	\$ 2,100.39				
DES R&I 8/28-10/1/11	10/6/2011	N/A	TEG	\$ 1,858.63				
CE; Aug - Sept R&I	10/28/11	N/A	CE	\$ 4,688.03				
<b>Sub-Total First Quarter</b>				<b>\$ (32,531.41)</b>	<b>\$ 63,624.99</b>	<b>\$ -</b>	<b>\$ 96,156.40</b>	<b>\$ 96,156.40</b>
CE; Proje DES-083	11/21/11	N/A	CE	\$ 39,731.19				
CE; EMR-11-011	11/21/11	N/A	CE	\$ 1,717.31				
DES CES Mgmt Fees	11/21/11	N/A	CE	\$ 3,612.25				
TEG	11/18/11	N/A	TEG	\$ 1,525.90				
TEG; DES R&I OCT/NOV	12/02/11	N/A	TEG	\$ 15,115.50				
CE; OCT 2011	12/19/11	N/A	CE	\$ 1,137.68				
<b>Sub-Total Second Quarter</b>				<b>\$ 62,839.83</b>	<b>\$ 63,624.99</b>	<b>\$ -</b>	<b>\$ 785.16</b>	<b>\$ 785.16</b>
TEG; DEC 2011	1/10/2012	N/A	TEG	\$ 7,391.19				
TEG; JAN 2012	2/6/2012	N/A	TEG	\$ 1,393.62				
MH-3 & 4 STRUCTURAL	1/25/2012	N/A	CE	\$ 52,400.00				
CE R&I; Regular EDS Maintenance	3/8/2012	N/A	CE	\$ 14,369.89				
CE R&I; DES-094	3/26/2012	N/A	CE	\$ 87,122.02				
Refund of Overpayment	3/28/2012	N/A	N/A	\$ (7,877.55)				
<b>Sub-Total Third Quarter</b>				<b>\$ 154,799.17</b>	<b>\$ 63,624.99</b>	<b>\$ -</b>	<b>\$ (91,174.18)</b>	<b>\$ (91,174.18)</b>
TEG; Feb 2012	4/24/2012	DES-1486	TEG	\$ 3,014.11				
CE MARCH	4/27/2012	DES-1496	CE	\$ 4,009.17				
076 State MH Rebuild	5/9/2012	DES-1502	TEG	\$ 2,875.21				
080 Misc Tunnel/MH R	5/9/2012	DES-1502	TEG	\$ 613.70				
090 MH/Tunnel Insul	5/9/2012	DES-1502	TEG	\$ 108.30				
093 MH 6 Rehab	5/9/2012	DES-1502	TEG	\$ 397.10				
087 MH-D Exploratory	5/9/2012	DES-1502	TEG	\$ 545.71				
095 MH B-2 Repair	5/9/2012	DES-1502	TEG	\$ 144.40				
048 EDS Lighting PH	5/9/2012	DES-1502	TEG	\$ 600.91				
061 Tunnel Steel Cor	5/9/2012	DES-1502	TEG	\$ 541.50				
080-Misc Tunnel MH R	5/17/2012	DES-1509	TEG	\$ 1,431.21				
090-MH/Tunnel Insul	5/17/2012	DES-1509	TEG	\$ 781.41				
094-Malloy Hot Spot	5/17/2012	DES-1509	TEG	\$ 180.50				
DES R&I	5/29/2012	DES-1512	CE	\$ 15,261.28				
DES 08 Misc Tunnel/R	6/11/2012	N/A	TEG	\$ 1,106.31				
DES 090 Tunnesl Insu	6/11/2012	N/A	TEG	\$ 108.30				
DES 094 Molloy Hot S	6/11/2012	N/A	TEG	\$ 1,566.71				
DES 087 MH-D Explora	6/11/2012	N/A	TEG	\$ 36.10				
DES 095 MH B-2 Repai	6/11/2012	N/A	TEG	\$ 180.50				
DES 048 EDS Lighting	6/11/2012	N/A	TEG	\$ 384.31				
DES 061 Tunnel Steel	6/11/2012	N/A	TEG	\$ 108.30				
DES 096 MH B\$ Valve	6/11/2012	N/A	TEG	\$ 1,866.16				
DES 080 Misc Tunnel/	6/30/2012	DES-1529	TEG	\$ 36.10				
DES 093 MH 6 Rehab	6/30/2012	DES-1529	TEG	\$ 72.20				
DES 094 Molloy Hot S	6/30/2012	DES-1529	TEG	\$ 7,956.74				
DES 087 MH-D Explora	6/30/2012	DES-1529	TEG	\$ 216.60				
DES 095 MH B-2 Repai	6/30/2012	DES-1529	TEG	\$ 144.40				
<b>Sub-Total Fourth Quarter</b>				<b>\$ 44,287.24</b>	<b>\$ 63,624.99</b>	<b>\$ -</b>	<b>\$ 19,337.75</b>	<b>\$ 19,337.75</b>
<b>FY12 Year to Date</b>				<b>\$229,394.83</b>	<b>\$254,499.96</b>	<b>\$ -</b>	<b>\$428,758.17</b>	<b>\$ 428,758.17</b>

## B. Preventive Maintenance

Preventive maintenance, tunnel and manhole inspections and reviews of customers' mechanical rooms were performed during the quarter. The principle items for discussion are presented. A more detailed review of the condition of the EDS is presented in subsection D of this report, "EDS Walk-through."

1. EDS Tunnel and Manhole Inspections
  - a. Manhole and Tunnel inspections were conducted as scheduled during the Fourth Quarter FY12 with the exception of June. Due to the construction work on 1<sup>st</sup> Avenue South and the frequent pumping of Manholes B and B2, June's inspections will take place early in FY13.
  - b. Faulty steam traps were replaced.
  - c. Minor repairs were made during the quarter.
2. State Tunnel Inspections
  - a. CNE continues to monitor some minor steam and condensate leaks within the tunnel.
  - b. Other minor repairs were made during the quarter.
3. Other EDS Inspections
  - a. The monthly thermographic analyses revealed no changes in the new hot spots near the James K Polk Building and in the Ryman Auditorium alley previously reported.
  - b. Other minor items are included in the CNE monthly reports.

## C. Emergencies

No emergencies were reported during the quarter.

## D. EDS Walk-through

Due to the amount of extraneous work surrounding the excavation of 1<sup>st</sup> Ave South under DES 094 and the groundwater removal from Manholes B and B2, a primary EDS walkthrough was not conducted during the Fourth Quarter FY12. This review will take place during the First Quarter FY13 along with the regularly scheduled First Quarter walkthrough.

## VI. Customer Relations

This section contains descriptions of the marketing efforts made by the DES Team during the quarter. The topics of interactions, meetings and training seminars with the customers are also discussed. There are currently 26 customers, comprised of 41 different buildings, connected to the EDS, including the Music City Convention Center. Service to each of these buildings

continues to prove satisfactory, and the responsiveness to customer issues is handled by CNE in an excellent and professional manner.

A. Marketing

TEG and Metro DES continue to monitor and remain involved with the progress associated with the development of the new Music City Convention Center (MCCC). TEG is actively working on the permanent service contract with the MCCC. The contract for temporary service with Bell Clark was executed during the Third Quarter and chilled water service began in April 2012.

TEG is finalizing the contract with the Nashville Hyatt Place and began work on the service connection design during the Fourth Quarter.

B. Customer Interaction

The CNE customer service representative (CSR) continues to respond to customer issues as they arise. Much of the communication involves minor problems with the customers' heating and cooling systems that are unrelated to DES service. Other more significant issues are summarized herein.

- The CSR coordinated several meetings between the customers, CNE, TEG and the contractors for particular projects that affected the steam, condensate and/or chilled water service to the customer.
- Several customers requested steam and condensate service isolation at their buildings during the quarter so that the customers could make internal repairs on their systems.
- The State Capitol building is currently under renovation, and this building has been isolated from all DES services.
- Customers were notified regarding a system steam outage scheduled to occur in July.
- CNE provided several customers assistance during the quarter regarding steam and chilled water leaks within buildings. Most of the time when such assistance is provided, it is determined that the leaks are the customers responsibility and are unrelated to the services provided by DES.
- Parkway Towers experienced a fire in May. All services were temporarily suspended to this building until electricity could be restored.
- Other minor issues and customer interactions are noted in the monthly CNE reports.

## VII. Recommendations

Based on the review of the Fourth Quarter EGF and EDS operations, the following recommendations are made.

- Chilled water customer should be notified not to use DES chilled water to re-fill their buildings after draining.
- Steam traps noted as not functioning should be repaired or replaced as soon as possible.
- Insulation which is absent, or in disrepair, in the manholes should be addressed through either additional capital projects, which include work within these manholes, or through DES090.